



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,208	03/04/2002	David Frederick Jordan	17805	3487

7590 04/22/2004

Tyco Technology Resources
Suite 450
4550 New Linden Hill Road
Wilmington, DE 19808-2952

EXAMINER

VANNUCCI, JAMES

ART UNIT PAPER NUMBER

2821

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant(s)

10/090,208

Applicant(s)

JORDAN ET AL.

Examiner

Jim Vannucci

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6-8, 12, 15, 17 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6-8, the limitation "depth of the reflector" is vague because it is not clear which distance is the depth. Would "thickness of the reflector" be a better choice or "distance between the reflector and the radiating element"?

Claims 12, 15, 17 and 21, the limitation "said antenna" is vague because it is not clear to which antenna this limitation is referring.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-2, 4-5, 10-15 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Sabet et al.(6,664,932).

Claim 1, figures 1 and 4 disclose first and second slot antennas(32 & 34) operating in the PCS and the AMPS frequency band(col. 2, line 55), a reflector(16) coupled to the antennas, and transmission lines(38 & 40) to feed the first and second slot antennas.

Claim 2, the radiating element disclosed in figure 1 is made from a printed circuit board material(14).

Claim 4, figure 19 discloses an additional GPS patch antenna(298).

Claim 5, the reflector(16) coupled to the radiating element in figure 1 is generally rectangular in shape.

Claim 10, the transmission lines disclosed in figures 1 and 4 are printed directly on the printed circuit board material(14).

Claim 11, the first and second slot antennas(32 & 34) disclosed in figures 1 and 4 are parasitically coupled due to their close relative positioning.

Claim 12, both the first and second slot antennas have a width less than 2.25 inches.

Claims 13-14, the transmission lines for the antennas disclosed in figure 19 have plug terminals(290, 292, 304 & 308) for connection to communication systems.

Claim 15, the length of an antenna in one of the disclosed frequency bands is less than 8.25 inches.

Claim 17, the length of an antenna in one of the disclosed frequency bands is less than 6.75 inches.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6-9, 16 and 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sabet in view of Wiesbeck(DE 100 34 547).

Sabet does not disclose the recited reflector dimension.

Claims 6-8, figure 1 of Wiesbeck discloses the depth of the reflector being between .75 inch and 1.25 inch, the depth of the reflector being a maximum of one-sixth of one wavelength for a signal in the PCS band, and the depth of the reflector being a maximum of one-thirteen of a wavelength for a signal in the AMPS band for improved antenna performance.

Claim 9, the amount of a signal from the radiating element that is reflected by the reflector disclosed in Sabet is 90% or greater of the total radiated signal striking the reflector based on it being a pcb ground plane.

Claim 16, the transmission lines disclosed in Sabet can be adapted for connection to the communication systems using a pigtail given their position on the pcb.

Claims 18-20, the first slot antenna operating in the PCS frequency band, the second slot antenna operating in the AMPS frequency band, and the GPS patch antenna disclosed in Sabet all achieve a gain of -3 dB or greater based on their positioning with respect to the other disclosed elements of the device.

Claims 21-22, depending on their orientation, the antennas disclosed in Sabet can use vertical polarization as a primary mode of reception and can contain a horizontal polarization component.

Claims 23-25, Sabet discloses that the antenna can be mounted to windshield in a vehicle that has a roof portion and that the amount of a signal radiated by the radiating element that enters the passenger compartment is less than 10% of the total radiated signal(col. 8, lines 57-61) based on the disclosed ground plane positioning for communications with a mobile device.

It would have been obvious to one of ordinary skill in the art at the time of the invention to position the radiating element disclosed in Sabet in the above referenced positions to obtain the referenced desired antenna characteristics.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sabet in view of Eason(6,642,898).

Sabet does not disclose FR4.

Claim 3, Eason discloses the use of FR4 with a slot antenna(col. 6, lines 52-54) for a smaller antenna(col. 1, lines 10-14).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use FR4 as disclosed in Eason with the antennas disclosed in Sabet so the

device can be made smaller as disclosed in Eason.

Response to Arguments

8. Applicant's arguments, see the Amendment, filed January 21, 2004, with respect to the rejection(s) of claim(s) 1-25 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sabet.

Correspondence

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Jim Vannucci whose phone number is (571) 272-1820.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center whose telephone number is (703) 308-0956.

Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (703) 872-9306.


James Vannucci